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Imaging

MULTICENTER EVALUATION OF DUAL SOURCE CT CORONARY ANGIOGRAPHY IN PATIENTS WITH INTERMEDIATE LIKELIHOOD OF CORONARY ARTERY STENOSES (MEDIC): ACCURACY FOR THE DETECTION OF INDIVIDUALS WITH SIGNIFICANT CORONARY ARTERY STENOSES

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Coronary CT angiography is suggested to rule out coronary stenoses in patients with low to intermediate pre-test likelihood. However, the accuracy of dual source CT in this patient group has not been assessed in a large-scale, multicenter trial.

Methods: In 6 international sites, 415 patients (30 to 80 years), scheduled for invasive coronary angiography due to suspected CAD, with intermediate likelihood of coronary stenoses (34% - 73% based on age, gender, symptoms) were studied with dual source CT (DSCT) coronary angiography. Patients with renal failure, atrial fibrillation, or Agatston score >800 were excluded. Coronary CT angiography was performed without administration of beta blockers, using DSCT (Definition, Siemens Healthcare) in spiral mode, ECG-based tube current modulation and 100 kV tube voltage for patients < 90kg. Contrast agent (iopromide, Ultravist 370, Bayer Healthcare, 6 ml/s) was injected for duration of data acquisition, but at least 10 seconds. CT and quantitative coronary angiography (QCA) were evaluated in independent core laboratories. Stenoses > 50% lumen reduction in CT were correlated to QCA on a per-patient basis.

Results: Mean and maximum heart rate during CT angiography was 67±20 and 72±20 bpm. Mean DLP was 424±237 mGy*cm (5.9 mSv). Mean contrast dose was 66±27 ml. No coronary segments were excluded. For the identification of patients with at least one coronary stenosis, coronary CT angiography had a sensitivity of 95% (104/110, 95%CI: 88%-98%), specificity of 95% (290/305, 95%CI: 92%-97%), positive predictive value of 84% (104/129) and negative predictive value of 98% (290/296). For the identification of patients who underwent revascularization, coronary CT angiography had a sensitivity of 92% (75/82) and specificity of 91% (289/333), positive predictive value of 63% and negative predictive value of 98%

Conclusion: In the largest multicenter trial to date, dual source CT coronary angiography demonstrated high diagnostic accuracy to identify patients with significant coronary artery stenoses among individuals with intermediate pre test likelihood. Even though no specific low-dose protocols were used, mean estimated radiation dose was only 5.9 mSv.